REMARKS

The application is believed to be in condition for allowance because the claims are novel and non-obvious over the cited art. The following paragraphs provide the justification for these beliefs. In view of the following reasoning for allowance, the applicants hereby respectfully request further examination and reconsideration of the subject application.

Claim Changes

Claims 1 and 26 have been amended to overcome the 101 rejection. Claim 18 has been amended to clarify the claim language of this claim.

Election/Restriction

The applicants reaffirm the provisional election of Claims 1-22 and 26-30 made on April 6, 2005 with traverse.

Claim Objections

Claim 18 was objected to because the limitation "(x,y.z)" includes parenthesis and does not clearly disclose whether this limitation includes or excludes this limitation. In response the applicants have amended this claim to add the word "coordinates" to clarify the claim.

The 35 USC 101 Claim Rejection

Claims 1, 3-20 and 26-30 were rejected under 35 USC 101 because it was contended that the claimed invention is directed to non-statutory subject matter. It was contended that Claims 1 and 26 do not disclose steps to produce a "useful, concrete and tangible" result, such as, output to be used by a specific system.

If a claimed mathematical algorithm or computer program produces a "useful, concrete, and tangible result" it cannot be rejected on the grounds of being non-statutory under 35 U.S.C. 101. AT&T Corp. v. Excel Communications, Inc., Docket No. 98-1338, (Fed. Cir. April 14, 1999). State Street Bank & Trust Co. v. Signature Financial Group, Inc., 149 F. 3d 1368 (Fed. Cir. 1998). The applicants' claims, as amended include "outputting said grid index series to a database" and "using the grid index series to perform a query of the location entities such that any query that seeks a match of a location entity at a small grid size does not seek a match of a location entity at a larger grid size than said small grid size" both which are practical applications within the technological arts by using a database to find data in a faster manner. Therefore the applicants' claimed invention includes a well-established practical application that satisfies the requirement of 35 USC 101. State Street Bank & Trust Co. v. Signature Financial Group, Inc., 149 F. 3d 1368 (Fed. Cir. 1998). Arrythmia Research Technology Inc. v. Corazonix Corp., 958 F.2d 1053, 22 USPQ2d 1033 (Fed. Cir. 1992). *MPEP* 706.03 et seq.

Therefore, it is believed that the applicants' claims, as amended, include a well-established practical application that satisfies the requirement of 35 USC 101. It is therefore respectfully requested that the rejection of Claims 1, 3-20 and 26-30 under 35 USC 101 be reconsidered based on the foregoing amendments and arguments.

The 35 USC 102(b) Rejection of 1, 3-6, 14-18, 26-27 and 29-30.

Claims 1, 3-6, 14-18, 26-27 and 29-30 were rejected under 35 USC 102(e) as being anticipated by McBride, U.S. Patent number 6,370,476 B1, herein after referred to as McBride. It was contended in the above-identified Office Action that McBride teaches all the elements of the rejected claims. The applicants respectfully disagree with this contention of anticipation.

The applicants claim a system and method for combining the precision estimate of a database entry's coordinate value such that the precision

information is included as part of a one-dimensional index by constructing a hierarchical index in which the size of the grid is related to the precision of the coordinate value. (Summary)

A grid index is a gridding of an n-dimensional space into a regular partition of the grid space forming grid units, for which for a point in space, x, there is a function index (x), which retrieves a unique integer value for the grid that contains Point x. A hierarchical grid index is effectively a number of grid indices overlaid on the same space, with grid units of different sizes. In this case, each of the functions requires an additional argument which specifies the size of the grid unit to use. Thus, assuming that the grid size, s, is drawn from a set of grid sizes, S, Index (x,s) returns a unique integer value for the grid of size s that contains Point x. Hierarchical indexes are used to enhance the performance of database queries. A query that seeks results from a small grid size, s_{small}, does not seek matches at a large grid size, s_{large}. (Summary)

The applicants' claimed invention is advantageous in that it can query very large databases in a fraction of the time it would take to generate a multidimensional query, as would be typical in traditional database schema. (Summary)

In contrast, McBride discloses **a system for improving the accuracy of location coordinate** determined in a survey of a chosen region. **A single grid of spaced apart points is imposed on the region, and a set of survey control points is provided.** A "near set" of nearest survey control points is associated with each grid point, and the number of elements in this new set may vary with the grid point. Definition of a near set can vary from one grid point to the next. For each grid point, a transformation T from a first coordinate system to a second coordinate system is determined that minimizes a collective difference between coordinates of each survey control point in the near set and the corresponding coordinates of that survey control point under the transformation T. For one, two or three coordinates of each grid point, the difference(s) between the coordinate(s) of the grid point in the near set and the corresponding coordinate(s) of that grid point under the

transformation T are computed. An interpolation function is determined that approximately matches the coordinate difference(s) at each grid point. The interpolation function provides a continuous datum-to-datum mapping between all points of the first and the second coordinate system. Determination of location of each survey point may use GPS, GLONASS, modified LEO or any other suitable location determination system. (abstract)

McBride does not teach the applicants' computing a one-dimensional grid index series wherein each location entity is represented as a series of grids that incorporate the location of each location entity; and outputting said grid index series to a database.

A prima facie case of anticipation is established only when the Examiner shows, inter alia, that the cited reference teaches each of the claimed elements of a rejected claim. In this case, **the McBride reference does not teach the advantageous features of the applicants' claimed invention such as computing a one-dimensional grid index series wherein each location entity is represented as a series of grids that incorporate the location of each location entity; and outputting said grid index series to a database.** The applicants' claimed invention is advantageous in that it can query very large databases in a fraction of the time it would take to generate a multidimensional query, as would be typical in traditional database schema.

Granted the Office Action states that computing a grid index series is taught at Col. 4, lines 32-33 and 40-44. But these passages do not teach any series of grids that incorporate the location of each location entity. It appears that they are discussing allowing different weights to be assigned to the points of a single grid.

Thus, the rejected claims recite advantageous features that are not taught in the cited art, and as such a prima facie case of anticipation is not established. It is,

therefore, respectfully requested that the rejection of Claims 1, 3-6, 14-18, 26-27 and 29-30 be reconsidered based on the novel claim language:

> "A computer-implemented process **for combining a precision estimate of a database entry's coordinate value with the coordinate value into a single index**, comprising the process actions of: inputting one or more location entities; **computing a one-dimensional grid index series wherein each location entity is represented as a series of grids that incorporate the location of each location entity; and outputting said grid index series to a database.**

And,

> "A computer-readable medium having computer-executable instructions for **combining a precision estimate of a database entry's coordinate value with the coordinate value into a single index**, said computer executable instructions comprising: inputting one or more location entities; **computing a one-dimensional grid index series wherein each location entity is represented as a series of grids that incorporate the location of each location entity; and using the grid index series to perform a query of the location entities such that any query that seeks a match of a location entity at a small grid size does not seek a match of a location entity at a larger grid size than said small grid size.** "

The 35 USC 103 Rejection of Claims 2 and 21-22.

Claims 2 and 21-22 were rejected under 35 USC 103(a) as unpatentable over McBride (U.S. patent number 6,370,476 (herein after McBride), in view of Agrawal et al., U.S. Patent No. 5,647,058 herein after Agrawal. The Office Action states that McBride discloses the elements of the applicant's claimed invention except that McBride does not specifically disclose a database. However, the Office Action contends such limitation is taught in Agrawal, thereby making the applicant's claimed invention obvious. The applicants respectfully disagree with this contention of obviousness.

In order to deem the applicant's claimed invention unpatentable under 35 USC 103, a prima facie showing of obviousness must be made. To make a prima facie showing of obviousness, all of the claimed elements of an applicant's invention must be considered, especially when they are missing from the prior art. If a claimed element is not taught in the prior art and has advantages not appreciated by the prior art, then no prima facie case of obviousness exists. The Federal Circuit court has stated that it was error not to distinguish claims over a combination of prior art references where a material limitation in the claimed system and its purpose was not taught therein (*In Re Fine*, 837 F.2d 107, 5 USPQ2d 1596 (Fed. Cir. 1988)).

The applicants' claimed invention relates to a system and method for combining the precision estimate of a database entry's coordinate value such that the precision information is included as part of a one-dimensional index by constructing a hierarchical index in which the size of the grid is related to the precision of the coordinate value. A grid index is a gridding of an n-dimensional space into a regular partition of the grid space forming grid units, for which for a point in space, x, there is a function index (x), which retrieves a unique integer value for the grid that contains Point x. A hierarchical grid index is effectively a number of grid indices overlaid on the same space, with grid units of different sizes.

As discussed above, the McBride reference does not teach the advantageous features of the applicants' claimed invention such as computing a one-dimensional grid index series wherein each location entity is represented as a series of grids that incorporate the location of each location entity; and outputting said grid index series to a database.

Agrawal teaches a high dimensional indexing method which takes a set of objects that can be viewed as N-dimensional data vectors and builds an index which treats the objects like k-dimensional points. The method first defines and applies a set of feature extraction functions that admit some similarity measure for each of the

stored objects in the database. The feature vector is then transformed in a manner such that the similarity measure is preserved and that the information of the feature vector v is concentrated in only a few coefficients. The entries of the feature vectors are truncated such that the entries which contribute little on the average to the information of the transformed vectors are removed. An index based on the truncated feature vectors is subsequently built using a point access method (PAM). A preliminary similarity search can then be conducted on the set of truncated transformed vectors using the previously created index to retrieve the qualifying records. A second search on the previously retrieved set of vectors is used to eliminate the false positives and to get the results of the desired similarity search. (Abstract)

Agrawal also **does not teach the advantageous features of the applicants' claimed invention such as computing a one-dimensional grid index series wherein each location entity is represented as a series of grids that incorporate the location of each location entity; and outputting said grid index series to a database.**

The applicants' claimed invention is advantageous in that it can query very large databases in a fraction of the time it would take to generate a multidimensional query, as would be typical in traditional database schema.

Thus, the applicant has claimed elements not taught in the cited art and which have advantages not recognized therein, namely speeding database queries. Accordingly, no prima facie case of obviousness has been established in accordance with the holding of *In Re Fine*. This lack of prima facie showing of obviousness means that the rejected claims are patentable under 35 USC 103 over McBride and Agrawal.

As such, it is respectfully requested that the rejection of Claims 2 and 21-22 be reconsidered based on the following claim language:

"**A computer-implemented process for combining a precision estimate of a database entry's coordinate value with the coordinate value into a single index,** comprising the process actions of: inputting one or more location entities; **computing a one-dimensional grid index series wherein each location entity is represented as a series of grids that incorporate the location of each location entity; and outputting said grid index series to a database.**

And,

"**A computer-readable medium having computer-executable instructions for combining a precision estimate of a database entry's coordinate value with the coordinate value into a single index,** said computer executable instructions comprising: inputting one or more location entities; **computing a one-dimensional grid index series wherein each location entity is represented as a series of grids that incorporate the location of each location entity; and using the grid index series to perform a query of the location entities such that any query that seeks a match of a location entity at a small grid size does not seek a match of a location entity at a larger grid size than said small grid size.** "

The 35 USC 103 Rejection of Claims 7-8, 19-20 and 28.

Claims 7-8, 19-20 and 28 were rejected under 35 USC 103(a) as unpatentable over McBride (U.S. patent number 6,370,476 (herein after McBride), in view of Enomoto, U.S. Patent No. 6,603,885. The Office Action states that McBride discloses the elements of the applicant's claimed invention except that McBride does not specifically disclose resolutions, and raster scan order. However, the Office Action contends such limitations are taught in Enomoto, thereby making the applicant's claimed invention obvious. The applicants respectfully disagree with this contention of obviousness.

As discussed previously, **the McBride reference does not teach the advantageous features of the applicants' claimed invention such as computing**

a one-dimensional grid index series wherein each location entity is represented as a series of grids that incorporate the location of each location entity; and outputting said grid index series to a database.

Enomoto teaches an image processing method and apparatus that acquires input image data from an image recorded optically, with a taking lens, and acquires the information about the lens used to record the image. The system and apparatus then performs image processing on the input image data using the acquired lens information. The input image data is subjected to aberration correction to correct for the deterioration in image quality due to the lens characteristics. (abstract)

However, **Enomoto does not teach the advantageous features of the applicants' claimed invention such as computing a one-dimensional grid index series wherein each location entity is represented as a series of grids that incorporate the location of each location entity; and outputting said grid index series to a database.**

Thus, the applicant has claimed elements not taught in the cited art and which have advantages not recognized therein, namely speeding data base queries using a one-dimensional grid index series. Accordingly, no prima facie case of obviousness has been established in accordance with the holding of *In Re Fine*. This lack of prima facie showing of obviousness means that the rejected claims are patentable under 35 USC 103 over McBride and Enomoto.

As such, it is respectfully requested that the rejection of Claims 7-8, 19-20 and 28 be reconsidered based on the previously quoted claim language.

The 35 USC 103 Rejection of Claims 9-13.

Claims 9-13 were rejected under 35 USC 103(a) as unpatentable over McBride (U.S. patent number 6,370,476, in view of Enomoto, U.S. Patent No. 6,603,885, and in further view of Porcelli et all (Porcelli hereinafter), U.S. patent number 6,333.924. The

Office Action states that McBride and Enomoto disclose the elements of the applicants' claimed invention except that McBride and Enomoto do not specifically disclose determining the longitudinal span, D, in degrees. However, the Office Action contends this limitation is taught in Porcelli, thereby making the applicants' claimed invention obvious. The applicants respectfully disagree with this contention of obviousness.

As discussed previously, the applicants' claimed invention relates to a system and method for combining the precision estimate of a database entry's coordinate value such that the precision information is included as part of a one-dimensional index by constructing a hierarchical index in which the size of the grid is related to the precision of the coordinate value.

As discussed above, the McBride and Enomoto references do not teach the advantageous features of the applicants' claimed invention such as computing a one-dimensional grid index series wherein each location entity is represented as a series of grids that incorporate the location of each location entity; and outputting said grid index series to a database.

Porcelli teaches a satellite broadcast and communication system employing a constellation of satellites in highly elliptical and highly inclined orbits, where the satellites remain almost stationary relative to ground users, describing a small loop in the sky around the apogee of the orbit for long periods of time. A user on the ground with conventional directive antenna will be provided with continuous communication services without interruption, 24 hours per day. The small loop where the satellites are operational is located around the highest latitude of the orbit. Therefore, it will have a high angular separation from satellites operating in the equational geostationary satellite orbit (hereafter more simply referred to as the geostationary satellite orbit), thus enabling a full sharing of the frequency hands used by the geostationary satellite orbit systems, without causing any interference between the two types of satellite network systems, and without the need for any interference migrating factors. The users of this orbit are able to see a completely

seamless transmission service from satellite without the need of switching between satellites, or service interruptions. (abstract)

Porcelli does not teach the advantageous features of the applicants' claimed invention such as computing a one-dimensional grid index series wherein each location entity is represented as a series of grids that incorporate the location of each location entity; and outputting said grid index series to a database.

Thus, the applicant has claimed elements not taught in the cited art and which have advantages not recognized therein, namely always efficiently delivering the most important information of a scene for a given bandwidth. Accordingly, no prima facie case of obviousness has been established in accordance with the holding of *In Re Fine*. This lack of prima facie showing of obviousness means that the rejected claims are patentable under 35 USC 103 over McBride and Enomoto in view of Porticelli.

As such, it is respectfully requested that the rejection of Claims 9-13 be reconsidered based on the previously quoted claim language.

The 35 USC 103 Rejection of Claims 19-20.

Claims 19-20 were rejected under 35 USC 103(a) as unpatentable over McBride U.S. patent number 6,370,476, in view of Enomoto, U.S. Patent No. 6,603,885, and in further view of Na, European Application No. EP 838 764 A2. The Office Action states that McBride and Enomoto disclose the elements of the applicants' claimed invention except that McBride and Enomoto do not specifically disclose a specific formula for mapping a location entity's coordinates in latitude and longitude to an index and a degree scale of precision. However, the Office Action contends this limitation is taught in Na, thereby making the applicants' claimed invention obvious. The applicants respectfully disagree with this contention of obviousness.

As discussed above, the McBride and Enomot references do not teach the advantageous features of the applicants' claimed invention such as computing a one-dimensional grid index series wherein each location entity is represented as a series of grids that incorporate the location of each location entity; and outputting said grid index series to a database.

Na teaches a a map data base management system and method for efficiently managing maps of various scales corresponding to one area. It employs **a map index file and a region index** to provide a map data base management method to manage map data of various scales on an area basis and on a country basis. The region index corresponds to a desired longitude and latitude and scale, using the map index file. The map index file contains a predetermined longitude and latitude range and a predetermined scale range, and storage position and data length of map data and start region index corresponding to each scale and region index, wherein the start region index has a number which is determined by the number of regions for partitioning a map having a scale just below said each scale by which the region corresponding to said each scale and said region index is divided, and the corresponding region index. However, Na does not teach a **one-dimensional grid index series wherein each location entity is represented as a series of grids that incorporate the location of each location entity**

Thus, the applicant has claimed elements not taught in the cited art and which have advantages not recognized therein, namely a **one-dimensional grid index series wherein each location entity is represented as a series of grids that incorporate the location of each location entity**, that allows a much faster data search than a multi-dimensional index. Accordingly, no prima facie case of obviousness has been established in accordance with the holding of *In Re Fine.* This lack of prima facie showing of obviousness means that the rejected claims are patentable under 35 USC 103 over McBride, Enomoto and Na.

As such, it is respectfully requested that the rejection of Claims 19-20 be reconsidered based on the following claim language:

> "**A computer-implemented process for combining a precision estimate of a database entry's coordinate value with the coordinate value into a single index,** comprising the process actions of: inputting one or more location entities; **computing a one-dimensional grid index series wherein each location entity is represented as a series of grids that incorporate the location of each location entity; and outputting said grid index series to a database.**

And,

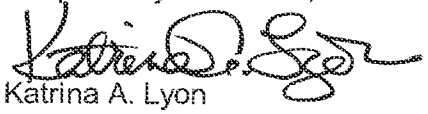
> "**A computer-readable medium having computer-executable instructions for combining a precision estimate of a database entry's coordinate value with the coordinate value into a single index**, said computer executable instructions comprising: inputting one or more location entities; **computing a one-dimensional grid index series wherein each location entity is represented as a series of grids that incorporate the location of each location entity;** and using the grid index series to perform a query of the location entities such that any query that seeks a match of a location entity at a small grid size does not seek a match of a location entity at a larger grid size than said small grid size. "

Summary.

In summary, it is believed that the claims, as amended, are in condition for allowance. Reconsideration of the rejection of Claims 1-22 and 26-30 is respectfully requested. Allowance of these claims at an early date is courteously solicited.

LYON & HARR, LLP
300 Esplanade Drive
Suite 800
Oxnard, CA 93036
(805) 278-8855

Respectfully submitted,



Katrina A. Lyon
Reg. No. 42,821
Attorney for Applicant(s)